950-178 Anginal Chest Pain in Very Elderly Patients With Severe Aortic Stenosis: Does it Predict Coronary Artery Disease

S.K. Sharma, S. Khan, V. Kakarala, J.A. Ambrose. *The Cardiovascular Institute, Mt Sinai Hospital, New York, NY, USA*

Patients with severe aortic stenosis without angina usually have been shown to have normal coronary arteries or non-obstructive coronary artery disease (CAD). However, the significance of the presence or absence of angina in very elderly patients with severe aortic stenosis is unknown. We evaluated the presence of coexisting CAD in elderly patients (age 81 ± 12 years) with severe calcific aortic stenosis in relation to history of angina. Patients with history of myocardial infarction or CABG were excluded. All patients were referred for balloon aortic valvuloplasty from 1989 to 1996 (mean aortic valve area 0.55 ± 0.32 cm^2). Cineangiograms and medical records were reviewed for coronary anatomy and historical data in 90 patients. All angiograms were interpreted visually by a single experienced angiographer, blinded to the patient's history. *Results:* Significant CAD (> 50% diameter stenosis) was strongly associated with the presence of angina. Most symptomatic patients had > 70% stenosis.

Stenosis	Angina (n = 32)	No angina (n = 67)
> 70%	15 (65%)	3 (4%)*
50–70%	3 (13%)	9 (13%)
<50%	5 (22%)	55 (82%)*

Conclusion: In this selected very elderly patient population with severe aortic stenosis, the presence of angina was a strong determinant of significant CAD; the absence of angina predicted non-significant stenosis.

951 Cardiovascular Disorders of Aging

Monday, March 17, 1997, 3:00 p.m.–5:00 p.m.
Anaheim Convention Center, Hall E
Presentation Hour: 3:00 p.m.–4:00 p.m.

951-129 Influence of Age and Sex on Angiographic Change in the Lipoprotein and Coronary Atherosclerosis Study (LCAS)

J.A. Herd, M.S. West, L. Ferlic, C.M. Ballantyne, A.M. Gotto, Jr.. *Baylor College of Medicine, Houston, TX, USA*

More data are needed on the CHD benefit of lipid lowering in the elderly and women. LCAS randomized pts with angiographic CHD and LDL-C of 115–190 mg/dl despite diet to fluvastatin (FL) 20 mg bid or placebo for 2.5 yr; adjunctive cholestyramine was given when prerandomization LDL-C remained ≥160. The primary endpoint was per-lesion per-pt change by QCA in minimum lumen diameter (MLD). Of the 340 pts with evaluable lesions, 25% were aged 65+ and 17% were women. In placebo pts, mean progression (PR) was lower among those aged 65+ than among those <65, and lower among women than men (table). FL treatment reduced PR to about the same lower rate in both age groups (no significant differences in response between the age groups), reduced PR in men, and reversed PR in women. More women than men had LDL-C ≥ 130 mg/dl; with adjustment for this difference, improvement in MLD with FL treatment was significantly better in women than men (p < 0.05).

Mean Percentage Change in MLD after 2.5 Yr

	All pt (n = 340)	Age < 65 (n = 254)	Age 65+ (n = 86)	Male (n = 283)	Female (n = 57)
Placebo	−6.4	−7.3	−3.9	−6.9	−3.4
FL	−2.4	−2.4	−2.6	−3.6	+2.4

Thus, lipid lowering by FL was as beneficial in older as in younger pts, and women responded to treatment as well as or better than men.

951-130 Severity and Morphologic Abnormalities of Aortic and Mitral Regurgitation in the Elderly: The Cardiovascular Health Study (CHS)

C.L. Reid, T. Kurosaki, J.S. Gottdiener, J.M. Gardin. *University of California, Irvine, Orange, CA, USA*

Aortic (AR) and mitral regurgitation (MR) represent important causes of cardiovascular disease; however, the prevalence, severity, and morphology of valvular regurgitation (REG) in a group of randomly selected elderly have not been well-defined. In CHS, a multicenter NHLBI study, 5,201 subjects (age ≥65 years) underwent two-dimensional (2D) and color Doppler echocardiographic examinations. Severity of REG by color Doppler was defined as a jet/left atrial area of <20% (mild) and ≥20% (mod-severe) for MR and jet/LV outflow tract height <46 (mild) and ≥46% (mod-severe) for AR. Of 19.9% with AR, 6.2% was mod-severe; of 30.1% with MR, 26.6% was mod-severe. Aortic valve morphology by 2D echo showed increased prevalence of thickened leaflets in subjects with AR (29%) compared to no AR (22%, p < 0.001) but the prevalence of thickened leaflets in mild and mod-severe AR subjects was similar (29 vs 31%). Dilated aortic root was present in 1.1% of those with AR vs 0.46% with no AR (p < 0.05). Mitral valve morphology showed prolapse in 1.9% with and 0.53% without MR (p < 0.001) and was more frequent in those with mod-severe MR (3.9% vs 1.2%, mild, p < 001). Thickened mitral leaflets was present in 11.6% with MR (13% mild; 6.5% mod-severe) vs 7.1% with no MR (p < 0.001). Mitral annular calcification (10% vs 5.9%, p < 0.001) and LV wall motion abnormalities (9.6% vs 5.6%, p < 0.001) were more common in subjects with than without MR, but did not predict severity.

Conclusions: In randomly selected community dwelling elderly: 1) AR and MR are common but mod-severe REG is unusual; 2) Morphologic abnormalities by 2D echo, most commonly valve thickening, are more frequent in those with AR or MR; and 3) Severity of REG cannot be predicted by valve morphology in this elderly population.

951-131 Predictors of Mortality in Elderly Patients With Severe Aortic Stenosis. A 5 Year Follow-up

H. Pierri, L.V. Decourt, M. Wajngarten, C. Medeiros, A. Catani, J.B. Serro-Azul, O. Gebara, A. Nussbacher, L.B.P. Pivotto, A.C. Pereira-Barreto, G. Bellotti. *Geriatric Cardiology, Heart Institute, São Paulo, Brazil*

Recognition of the predictors of mortality in elderly patients (pts) with severe aortic stenosis (AS) is important for clinical decisions. 56 pts (80.4 ± 5.2 years) with severe AS (valve area 0.6 ± 0.2 cm^2 and/or LV-aortic gradient of 66.4 ± 20.8 mmHg) were followed biannually for a mean period of 72 months. We analyzed the relation between mortality and symptoms, EKG, and Echo data by uni and multivariate analysis. 23% of the pts were asymptomatic and 77% symptomatic (dyspnea, angina or syncope). 32% of the pts died during follow-up.

The following parameters had a positive correlation with mortality by univariate analysis: increased age (p = 0.01), higher end-systolic volume (p = 0.006), left atrial enlargement by EKG (p = 0.04), presence of left bundle branch block (p = 0.02), and presence of dyspnea (p = 0.003), while there was a negative correlation (lower mortality) with: presence of sinus rhythm (p = 0.004) and absence of symptoms (p = 0.02). Multivariate analysis showed a positive correlation between mortality and increased age (p = 0.002) and EKG left atrial enlargement (p = 0.002), and a negative correlation (lower mortality) with the presence of sinus rhythm (p = 0.0007) and the absence of symptoms (p = 0.04).

In conclusion: 1. The most powerful predictors of mortality were increased age, absence of sinus rhythm, left atrial enlargement by EKG and the presence of symptoms; 2. The presence of symptoms is a more powerful predictor of mortality than any Echo-derived index. 3. Elderly pts with severe AS but asymptomatic and in sinus rhythm have a low risk of death, and a conservative approach is adequate in such cases.

951-132 Older Patients With Nonvalvular Atrial Fibrillation Have Lower Left Atrial Appendage Velocities Despite Higher Left Ventricular Ejection Fraction and Similar Left Atrial Size

A. Ilercil, S.-S. Yao, A. Hla, J. Meisner, J. Strom, J. Shirani. *Albert Einstein College of Medicine, Bronx, NY, USA*

Elderly pts with nonvalvular atrial fibrillation (NVAF) are at higher risk of embolism regardless of other risk factors. Low left atrial appendage (LAA) velocities in NVAF predict increased risk of embolism. We studied 30 consecutive pts [age 43–91 yrs (mean 70 ± 11), 53% men] with NVAF by transthoracic and multiplane transesophageal echocardiography to evaluate the effect of age on LAA velocities. The following were compared in pts younger (n = 16, age 62 ± 7 yrs) and older (n = 14, age 79 ± 6 yrs) than 70 yrs of age: LA diameter (D) and volume (V); LVD, mass (M), and EF; LAA area (A) and V; LAA peak emptying and sum of peak emptying and peak filling velocities (PE and PE+F); spontaneous echo contrast (SEC) and mitral regurgitation (MR). There was no difference in LAD (4.7 ± 0.4-vs-4.8 ± 0.6 cm), LAV (93 ± 38-vs-100 ± 38 ml), LVM (248 ± 96-vs-234 ± 78 g), LAA A (5.9 ± 2.9-vs-4.6 ± 2.3 cm^2) or LAA V (5.7 ± 5.4-vs-3.6 ± 3.4 ml) between the 2 groups (all p = NS). Older pts, however, had lower LAA PE (23 ± 5-vs-34 ± 17 cm/s, p = 0.01), lower PE+F (52 ± 14-vs-72 ± 35 cm/s, p = 0.03), smaller LV diastolic D (4.3 ± 0.6-vs-4.9 ± 1.0 cm, p = 0.04), and

higher LVEF (63 ± 10-vs-54 ± 10%). SEC and MR frequency and severity were similar in both groups. Multivariate regression analysis identified LVEF, LV D and LA V as correlates of LAA PE (multiple r = 0.88, p = 0.002) in older but not younger pts. *Conclusion:* Compared with younger pts, older pts with NVAF have significantly lower LAA velocities despite higher LVEF, smaller LV size, and similar LA volumes. This finding may explain the previously reported increased frequency of embolic events in older pts with NVAF.

951-133 Large Artery Stiffness and Beta Adrenergic Relaxation In Aged Rats

M.A. Gaballa, T.E. Raya, C.T. Jacob, S. Goldman. *Departments of Internal Medicine, Veterans Administration Medical Center and University Heart Center, University of Arizona, Tucson, AZ, USA*

To determine the effect of age on arterial wall stiffness and to elucidate possible mechanisms in the NIA recommended aging breed, BNxF344, pressure-radius curves (P-r) and isoproterenol dose response were measured in carotid arteries of 6 month and 23 month old rats. P-r were measured at baseline to determine the in vivo active stiffness, after stimulation of the α-adrenergic receptor (AR) with 10^{-7}M norepinephrine to determine the active stiffness, and after Ca^{2+}-depletion to determine the passive stiffness. In addition, β-AR response to isoproterenol was obtained in the presence and absence of the endothelium. Lumen diameter, media thickness, and smooth muscle area were increased by 28%, 36% and 19%, respectively, in 23 month compared to 6 month old rats. Both in-vivo active and passive stiffness, measured from the slopes of the stress-strain curves, were augmented with age. Isoproterenol-induced relaxation was diminished with age. We concluded that in the BNxF344 model, arterial passive stiffness was increased with age. This increase was not explained by elevated media thickness because the passive stress-strain curves were shifted to the left in the 23 month compared to the 6 month old rats. Therefore, this increase in stiffness may be due to intrinsic alterations in smooth muscle cells and/or extracellular matrix. In addition, the increase in the in vivo active stiffness with age may be due to diminished β-AR stimulated vasorelaxation.

MONDAY POSTER

952 Adult Cardiothoracic Surgery I

Monday, March 17, 1997, 3:00 p.m.–5:00 p.m.
Anaheim Convention Center, Hall E
Presentation Hour: 4:00 p.m.–5:00 p.m.

952-122 Prognostic Value of Resting Left Ventricular Ejection Fraction Early Following Successful Coronary Artery Bypass Surgery

A.F. Jacobson, D. Lapsley, D.E. Tow, S. Khuri. *VA Medical Centers, Seattle, WA, USA, West Roxbury, MA, USA*

The prognostic value of resting left ventricular ejection fraction (LVEF) early following successful coronary artery bypass graft (CABG) surgery (no 30-day mortality) was examined in 356 consecutive patients (pts) (353 male) (mean age 58.6) who had: Surgery between 1982–1985; pre- (mean 7.0 days) and post-CABG (mean 8.6 days) first-pass radionuclide ventriculographic LVEF (LVEF1 and LVEF2); post-surgical follow-up. Ten-year survival (TS) was determined from Kaplan-Meier curves and examined as a function of LVEF1 and LVEF2 (represented as LVEF2 = 1 in table) among all pts, and in the subgroups with improvement in LVEF2 (LVEF2-LVEF1 ≥5%) (Δi) (n = 187) or no improvement (Δn) (n = 169).

During follow-up, 117 pts (30%) died; mean follow-up among survivors was 11.1 yr. TS probabilities were as follows:

LVEF1 (%)	<30	30–34	35–39	40–44	45–49	50–54	55–59	≥60
# pts→	11	27	55	47	76	73	45	22
TS: All	0.18	0.50	0.58	0.65	0.75	0.69	0.82	0.86
Δi	0.14	0.61	0.65	0.69	0.78	0.74	0.83	0.75
Δn	0.25	0.34	0.50	0.61	0.71	0.64	0.81	0.89
LVEF2 = 1	0.18	0.34	0.50	0.60	0.67	0.72	0.80	0.80

For LVEF1 of 30–54%, TS was consistently higher for Δi than Δn ($p < 0.05$ for the entire range and for LVEF1 of 30–39%). Conversely, for abnormal LVEF values (<50%), TS for LVEF2 groups tended to be lower than for pts with comparable LVEF1 results (LVEF2 = 1 vs All data in table).

In pts with moderately impaired LVEF pre-CABG, early post-CABG LVEF stratifies pts for long-term survival prognosis, with those who show improved LVEF having a statistically significant survival advantage.

952-123 Post-Infarction Large Akinetic Scar: Benefits of Endoventricular Patch Plasty Repair in Patients with Severe Left Ventricular Dysfunction

M. Di Donato, M. Sabatier[1], V. Dor[1], F. Montiglio[1], M. Maioli, A. Toso, G. Barletta, F. Fantini. [1] *Centre Cardiothoracique de Monaco, Monaco, Italy, Institute of Internal Medicine & Cardiology, University of Florence, Italy*

Large anterior myocardial infarction leaves either akinetic (S) or dyskinetic (D) scar. The latter is known to have a more favorable outcome than S, when surgically treated. The study addresses 40 patients (61 ± 9 years) with S and compares to 49 patients (60 ± 8 years) with D, both with asynergy involving ≥60% of LV perimeter (centerline method) and preoperative EF ≤ 30%, who underwent endoventricular circular patch plasty repair and coronary grafting. They were comparable for clinical variables. In both groups, 85% had heart failure as major indication for surgery and was in NYHA class III/IV.

	Patients with S		2Patients with D	
	Preop	Postop	Preop	Postop
EF (%)	23 ± 4	38 ± 11#	23 ± 6	42 ± 10#
EDVI (m1/m2)	248 ± 79*	107 ± 47#*	211 ± 79	89 ± 30#
CWP (mmHg)	20 ± 9*	12 ± 7#	16 ± 7	12 ± 56#

*p < 0.05 vs D; # vs basal

Mortality rate was 10.4% in S and 17% in D (ns). Results show that patients with S had worse preoperative hemodynamics; nevertheless, they had the same improvement in function than D. The reduction of wall tension and O_2 demand due to reduction of volumes and the increase in O_2 supply due to revascularization play the major role in improving pump function. Thus, patients with end-stage ischemic cardiomyopathy benefit from a surgical technique previously reserved only for dyskinetic aneurysm.

952-124 Improvement of Coronary Blood Flow and Function in Hibernating Myocardium Immediately After Coronary Artery Bypass Grafting

F. Alamanni, A. Repossini, A.A. Lotto, F. Bortone, A. Parolari, E. Doria, L. Ruffini, M. Pepi, P. Biglioli, O. Parodi. *Centro Cardiologico Fondazione I. Monzino and C.N.R. Clinical Physiology Institute, Section of Milan, Milan, Italy*

The link between coronary blood flow (CBF) and recovery of myocardial function in hibernating myocardium soon after coronary revascularization is unknown. To gain further insight into the perfusion-contraction matching in dysfunctioning viable myocardium, we studied 10 patients (9 men, 1 woman, aged 54 to 73 years) undergoing coronary artery bypass grafting (CABG) of the left anterior descending coronary artery (LAD) with hibernation in the LAD-related segments. Myocardial viability in the LAD territory was observed in all patients by either dobutamine stress echocardiography (69% of the 45 dyssynergies) or quantitative Thallium-201 rest-redistribution (89%) criteria. CBF by great cardiac vein thermodilution technique and regional wall motion by transesophageal echocardiography were assessed simultaneously in the LAD territory before CABG and 20 minutes after weaning from cardiopulmonary bypass, following stabilization of hemodynamic variables. Regional function improved immediately after CABG in 75% of the dyssynergies (wall motion score index from 2.7 ± 0.7 to 1.6 ± 1.1, $p < 0.01$). No hyperkinesis of the pre-CABG normally contracting segments was observed. CBF from the LAD territory increased in all patients after surgery (from 57 ± 30 to 125 ± 56 ml/min, $p < 0.01$). At follow-up, 75.5% of the dysfunctioning segments had function normalized or improved.

These results suggest that in hibernating myocardium baseline CBF is chronically reduced and that improvement of perfusion following revascularization is associated with an immediate functional recovery of the hypoperfused-dependent myocardium.

952-125 Preoperative Pulmonary Factors as Independent Predictors of Patient Outcome After Coronary Bypass

C.C. Canver, R.D. Nichols, S.D. Cooler. *The University of Wisconsin School of Medicine, Madison, WI, USA*

Respiratory complications after a successful coronary bypass influence the length of a patient's recovery. To determine the effects of preoperative pulmonary factors on the length of intensive care unit (ICU)/hospital stay and late survival after coronary artery bypass grafting (CABG), a retrospective study was performed on 793 veteran patients (613 patients <70 years, 180 patients ≥70 years) undergoing CABG (1987 to 1995).